



Engineering Sciences Section – 2009

C13 Asbestos and Environmental Crimes

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After attending this presentation, attendees will see how environmental crimes can be proven to have happened even after most of the evidence has been removed.

This presentation will impact the forensic community by showing some of the interesting challenges faced by an environmental forensic chemist in proving beyond a reasonable doubt that violations of environmental laws in the renovation and demolition of asbestos-containing materials (ACM) has occurred.

EPA regulations come into play when specific amounts of ACM are removed from a building or released into the environment. Often when the investigation starts, much of the material has been removed. Calculations from information in photographs or evidence found after the removal may be used to determine if a violation exists.

Several cases will be discussed:

Case #1 involved photos of a pile of debris dumped on the side of the road. Five samples were taken for analysis. Neither the height nor width of the pile was measured, but the analyst was asked to determine how many pounds of asbestos were in the pile. Paperwork found in the pile of debris led back to the company that dumped the asbestos containing material. The company paid a substantial fine and also paid for the cleanup.

Case #2 involved a school that contracted for asbestos pipe wrap removal during the summer vacation. Glove bags were specified in the removal of the wrap from the pipes. Instead, the pipe wrap was ripped off the pipes onto the floor, with the debris later shoveled into the glove bags. The bags were sealed as if used properly, and then disposed. The school was cleaned after abatement and EPA was not called until six months later. The investigator found several small samples of pipe wrap (each smaller than a paperclip), which were analyzed and found to contain asbestos. Vacuum cleaner bags and a vacuum cleaner used a year after the abatement were inspected for asbestos fibers and found to be contaminated, showing that the asbestos debris was spread to multiple classrooms in the school.

Case #3 is where abatement occurred inside a building, but samples taken outside the building showed that the lack of containment contaminated the outside windows and sidewalks. The business was open during the abatement, plus a high school junior/senior prom was held inside the building.

Case #4 involves a casino renovation where drywall coated with asbestos-containing paint was ripped out of the rooms, then illegally dumped into a landfill. The analyst was asked to determine how many pounds of asbestos were deposited into the landfill, using the quantity of asbestos in the paint in a known area on the drywall and photos and measurements of the pile of drywall that was dumped.

These are common types of requests asking the chemists at the U.S. EPA to use not only chemistry, but logic and math to help demonstrate violations of an environmental regulation act have occurred. Not only is polarized light microscopy used to determine the amount of asbestos in samples, but other documentary evidence, such as photos, are used to piece together information for case development.

Environmental Forensics, Environmental Crimes, Asbestos